Light scattering measurements enabled by acoustic levitation with 3D orientation control

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We present newly developed acoustic levitation system with remote orientation control for reliable manipulation of mm-sized particles. The system allows conducting comprehensive measurements of light scattered by the sample held in place by sound. The absence of interfering sample holder in the setup (enabled by levitation) allows non-destructive measurements of the sample in all orientations [1]. The obtained measurement data, in turn, provide a more complete presentation of the Mueller matrices of the studied scatterers.

The main goal of this presentation is to explain how the choice and stability of the position, as well as orientation of the levitated samples are achieved in the course of the experiment, and how this knowledge was integrated in the levitator system.

This study is supported by the European Research Council Advanced Grant project No. 320733, SAEMPL: "Scattering and absorption of electromagnetic waves in particulate media".

References

[1] Maconi, G., Penttilä, A., Kassamakov, I., Gritsevich, M., Helander, P., Puranen, T., Salmi, A., Hæggström, E., and Muinonen, K., 2018: Non-destructive controlled single-particle light scattering measurement. *J. Quant. Spectrosc. Radiat. Transfer* **204**, 159–164.

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